

**NEAR-NET-SHAPE POLYMERIZATION PROCESS AND  
MATERIALS SUITABLE FOR USE THEREWITH**

5 **ABSTRACT**

10 This invention is directed to a processing approach for the rapid and efficient in-situ polymerization of specially prepared precursor mixtures to achieve near-net-shape production of objects/articles with exact dimensions. The process relies on the use of polymerizable compositions comprised of a mixture of a dead polymer, a reactive plasticizer and, optionally, an initiator, which compositions are semi-solid-like prior to curing and induce low shrinkage upon curing as a result of their partially polymerized nature prior to processing. The partially polymerized nature of the precursor mixtures also allows extremely impact-resistant objects/articles to be fabricated. Other desirable engineering property attributes can similarly be achieved via the judicious blending of starting ingredients in formulating the polymerizable (curable) mixtures.

10

205220" STEEL